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COMMODITY DRAIN FROM FORESTS OF THE LAKE STATES

1946

By Arthur G. Horn, Forest Economist

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Lake States Forest Experiment Station

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By Arthur G. Horn, Forest Economist [1]
Lake States Forest Experiment Station [2]

INTRODUCTION

Shortly after World War II, a field survey was initiated to obtain accurate information on the forest resources of the Lake States. Collection and compilation of timber drain statistics was one of several important phases of this survey.

As a means of determining the annual drain, the Station has obtained annual or periodic reports for the principal forest industries. These reports cover either the year's production of finished products or the receipts of sawlogs and bolts at the plants. From them the Station computes commodity drain, that is, the amount of live merchantable timber removed through cutting, including logging waste, during the year.

To meet the frequent requests for production and drain data resulting from the survey, the Station has prepared a set of tables giving Lake States production and drain figures for 1946. In using the data, it is important to keep in mind the standards and definitions used in compiling the information. (See page 2).

Basis for Production Statistics

The Bureau of the Census collected and published Lake States lumber production statistics for 1946. The figures are based on a sample survey carried on in conjunction with the sawmill canvass for the 1947 Census of Manufactures. These lumber production figures and supplemental data collected by the Station to determine interstate movement of logs were used as a basis for sawlog and box-bolt production estimates.

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[2] Maintained by U.S. Department of Agriculture, Forest Service, in cooperation with the University of Minnesota, at University Farm, St. Paul, Minnesota.

For veneer, pulpwood, distillation wood, excelsior, cooperage and miscellaneous products (matches, clothespins, bowling pins, handles, etc.) a complete canvass was made of all known plants early in 1947. The volume of logs and bolts received at these plants during the calendar year was used as a basis for production estimates.

Production statistics for such minor items as piling, poles, hewn ties and mine timbers, lagging, etc., were obtained by using results of the 1947 survey of these items and comparing them with reliable production indices for 1946-47, i.e., annual underground ore production by states, pole and piling receipts of several large wholesalers and distributors who handle most of the regional output. Because financial limitations precluded making special surveys, estimates for fuelwood, posts, and some miscellaneous items were based largely on surveys made during the latter stages of World War II. Some adjustments were made on the basis of more recent findings from wholesalers and distributors.

Conversion Factors

The Station has collected supplemental information on each product as to percent of wood volume obtained from live, dead, cull trees, and byproduct material; also proportion of volume cut from saw-timber and pole-timber trees. Gross volumes of individual products were determined by information furnished by industry. For example, stock records for posts, poles, and piling showed the number of pieces by length, top, and butt diameters. Such information made possible calculations of gross volume for each product. By incorporating these findings with data collected during a previous field survey (1936-37), a set of conversion and waste factors were prepared which are closely in line with present utilization standards of wood-using industries.

General Limitations of Data

The forest survey accuracy goal for drain data is ± 5 percent per billion cubic feet, which would permit a standard error of slightly more than 6 percent on the 1946 estimate for the Lake States. Because of the absence of an accurate survey for fuelwood for that year, the estimates presented here may not be within that limit. We feel, however, that the estimates are the best obtainable at this time and will serve a useful purpose. Figures for most products are within the proposed limits.

Survey Definitions

Commodity Production

The gross volume of a forest product made from any class of material from commercial or noncommercial forest lands. Production has been expressed in the following standard survey units: Board-feet log scale International 1/4-inch rule; feet, board measure lumber tally; cord (4x4x8 feet), rough wood basis; number of pieces; and number of cubic feet (inside bark).

Commodity Drain

The net volume of timber removed from growing stock on commercial forest lands through cutting and logging waste during the year, expressed in board feet, International 1/4-inch rule and cubic feet (i.b.).

Drain from Saw-Timber Trees

The net volume (board feet, International 1/4-inch) of the log portion in softwood trees 9 inches and larger and hardwood trees 11 inches and larger, d.b.h., removed or wasted during logging operations. The cubic-foot volume shown includes both the saw-timber equivalent and the volume in the tops of softwood trees to a 4-inch minimum.

Drain from Pole-Timber Trees

The net volume in cubic feet (i.b.) of pole timber removed through cutting and logging waste during the year. Included in this class are softwood trees from 5.0 to 8.9 inches and hardwood trees from 5.0 to 10.9 inches d.b.h. It includes cubic-foot volume found in the tree stems to a minimum top diameter of 4 inches (i.b.).

Table 1.--Sawlog and box-bolt production in the Lake States - 1946

Species and origin	Volume cut and destination			
	Total	Minn.	Wis.	Mich.
	M bd.ft., Int'l. 1/4-inch			
White pine	59,460	14,220	25,825	19,415
Minnesota	14,220	14,220	..	..
Wisconsin	24,430	..	24,390	40
Michigan	20,810	..	1,435	19,375
Red pine	56,955	27,500	20,555	8,900
Minnesota	27,500	27,500	..	..
Wisconsin	20,480	..	20,480	..
Michigan	8,975	..	75	8,900
Jack pine	71,555	53,100	6,320	12,135
Minnesota	53,100	53,100	..	..
Wisconsin	6,300	..	6,240	60
Michigan	12,155	..	80	12,075
Spruce	9,870	3,275	1,450	5,145
Minnesota	3,275	3,275	..	..
Wisconsin	1,340	..	1,340	..
Michigan	5,255	..	110	5,145
Balsam	3,555	1,590	855	1,110
Minnesota	1,590	1,590	..	..
Wisconsin	855	..	855	..
Michigan	1,110	..	..	1,110
Tamarack	4,280	1,975	1,370	935
Minnesota	1,975	1,975	..	..
Wisconsin	1,370	..	1,370	..
Michigan	935	..	..	935
Cedar	7,015	790	895	5,330
Minnesota	790	790	..	..
Wisconsin	805	..	805	..
Michigan	5,420	..	90	5,330
Hemlock	189,700	..	70,545	119,155
Minnesota	..	..	..	..
Wisconsin	60,765	..	60,745	20
Michigan	128,935	..	9,800	119,135
Softwood total	402,390	102,450	127,815	172,125
Minnesota	102,450	102,450	..	..
Wisconsin	116,345	..	116,225	120
Michigan	183,595	..	11,590	172,005
Maple	226,225	940	66,100	159,185
Minnesota	940	940	..	..
Wisconsin	50,485	..	50,485	..
Michigan	174,800	..	15,615	159,185
Birch	74,285	1,150	27,320	45,815
Minnesota	1,150	1,150	..	..
Wisconsin	20,070	..	20,060	10
Michigan	53,065	..	7,260	45,805
Basswood	43,175	8,225	20,015	14,935
Minnesota	8,225	8,225	..	..
Wisconsin	18,465	..	18,465	..
Michigan	16,485	..	1,550	14,935
Elm	63,410	11,090	25,455	26,865
Minnesota	11,090	11,090	..	..
Wisconsin	24,815	..	24,815	..
Michigan	27,505	..	640	26,865
Beech	25,250	..	630	24,620
Minnesota	..	..	..	..
Wisconsin	630	..	630	..
Michigan	24,620	..	..	24,620
Oak	108,625	11,670	65,155	31,800
Minnesota	11,670	11,670	..	..
Wisconsin	64,985	..	64,985	..
Michigan	31,970	..	170	31,800
Aspen	140,650	59,885	49,735	31,030
Minnesota	59,885	59,885	..	..
Wisconsin	47,305	..	46,435	870
Michigan	33,460	..	3,300	30,160
Cottonwood	10,910	7,400	1,275	2,235
Minnesota	7,400	7,400	..	..
Wisconsin	1,275	..	1,275	..
Michigan	2,235	..	..	2,235
Ash	14,390	1,800	6,890	5,700
Minnesota	1,800	1,800	..	..
Wisconsin	6,590	..	6,590	..
Michigan	6,000	..	300	5,700
Hickory	640	..	65	575
Minnesota	..	..	..	..
Wisconsin	65	..	65	..
Michigan	575	..	..	575
Cherry	705	..	50	655
Minnesota	..	..	..	..
Wisconsin	50	..	50	..
Michigan	655	..	..	655
Walnut	375	..	40	335
Minnesota	..	..	..	..
Wisconsin	40	..	40	..
Michigan	335	..	..	335
Misc.	5,340	320	1,280	3,740
Minnesota	320	320	..	..
Wisconsin	1,280	..	1,280	..
Michigan	3,740	..	..	3,740
Hardwood total	713,980	102,480	264,010	347,490
Minnesota	102,480	102,480	..	..
Wisconsin	236,055	..	235,175	880
Michigan	375,445	..	28,835	346,610
All species	1,116,370	204,930	391,825	519,615
Minn.	204,930	204,930	..	..
Wis.	352,400	..	351,400	1,000
Mich.	559,040	..	40,425	518,615

Table 2.--Production of logs for commercial veneer industry in the Lake States 1946

Species and origin	Volume cut and destination					Imports	
	Total	Minnesota	Wisconsin	Michigan	Other U. S.	Other U. S.	Foreign Canada
	M board feet, International 1/4-inch Rule						
White pine	810	...	710	100	...	...	...
Minnesota	30	...	30	...	...	...	...
Wisconsin	130	...	130	...	...	...	...
Michigan	650	...	550	100	...	...	...
Maple	32,540	...	19,460	12,880	200	20	250
Minnesota	...	...	...	...	...	...	...
Wisconsin	6,630	...	6,550	...	80	20	250
Michigan	25,910	...	12,910	12,880	120	...	...
Birch	24,710	320	19,140	5,250	...	...	3,720
Minnesota	270	270	...	...	...	...	...
Wisconsin	4,100	50	4,050	...	...	...	3,150
Michigan	20,340	...	15,090	5,250	...	...	570
Basswood	8,300	100	7,090	950	160	440	...
Minnesota	820	100	720	...	...	...	...
Wisconsin	4,510	...	4,450	...	60	440	...
Michigan	2,970	...	1,920	950	100	...	...
Elm	6,390	...	5,340	970	80	255	...
Minnesota	250	...	250	...	...	...	...
Wisconsin	3,210	...	3,210	...	...	255	...
Michigan	2,930	...	1,880	970	80	...	...
Beech	2,610	...	180	2,430	...	...	...
Minnesota	...	...	...	...	...	...	...
Wisconsin	70	...	70	...	...	...	...
Michigan	2,540	...	110	2,430	...	...	...
Oak	2,600	...	2,140	380	80	...	10
Minnesota	...	...	...	...	...	...	...
Wisconsin	2,010	...	1,980	...	30	...	10
Michigan	590	...	160	380	50	...	...
Aspen	290	70	190	30	...	...	...
Minnesota	...	...	...	...	...	...	...
Wisconsin	260	70	190	...	...	...	...
Michigan	30	...	...	30	...	...	...
Ash	2,020	...	1,880	140	...	80	...
Minnesota	80	...	80	...	...	...	...
Wisconsin	640	...	640	...	...	80	...
Michigan	1,300	...	1,160	140	...	...	...
Walnut	330	...	...	...	330	...	...
Minnesota	70	...	...	...	70	...	...
Wisconsin	170	...	...	...	170	...	...
Michigan	90	...	...	...	90	...	...
Other 1/	170	...	100	20	50	1,090	...
Minnesota	70	...	70	...	...	...	...
Wisconsin	20	...	20	...	...	130	...
Michigan	80	...	10	20	50	960	...
All species	80,770	490	56,230	23,150	900	1,885	3,980
Minnesota	1,590	370	1,150	...	70	...	...
Wisconsin	21,750	120	21,290	...	340	925	3,410
Michigan	57,430	...	33,790	23,150	490	960	570

1/ Cottonwood, hackberry, sycamore, cherry, and yellowpoplar.

Table 3.--Production of logs and bolts for container veneer industry, in the Lake States - 1946

Species and origin	Volume cut logs and bolts		Imports	
	Veneer logs	Heading stock	Other U. S.	Canada and foreign
	M bd. ft., In'tl. 1/4-inch	Standard cords (rough)	M bd. ft., Int'l. 1/4-inch	
White pine	80	...	...	...
Minnesota	...	...	...	...
Wisconsin	80	...	...	...
Michigan	...	...	...	...
Softwood total	80	...	...	...
Minnesota	...	...	...	...
Wisconsin	80	...	...	...
Michigan	...	...	...	...
Maple	8,790	830	...	...
Minnesota	90	...	...	...
Wisconsin	980	830	...	...
Michigan	7,720	...	...	...
Birch	1,280	380	...	...
Minnesota	120	...	...	...
Wisconsin	20	380	...	...
Michigan	1,140	...	...	...
Basswood	2,330	2,460	...	...
Minnesota	320	...	...	...
Wisconsin	1,020	2,420	...	...
Michigan	990	40	...	...
Elm	12,050	1,580	30	...
Minnesota	100	...	...	...
Wisconsin	4,980	1,520	...	...
Michigan	6,970	60	30	...
Beech	3,370	10	10	...
Minnesota	...	...	...	...
Wisconsin	20	...	...	...
Michigan	3,350	10	10	...
Oak	640	90	...	...
Minnesota	...	...	...	...
Wisconsin	40	90	...	...
Michigan	600	...	...	...
Aspen	650	12,260	...	...
Minnesota	150	...	...	...
Wisconsin	120	12,260	...	...
Michigan	380	...	...	...
Other 1/	760	1,200	10	...
Minnesota	140	...	...	...
Wisconsin	260	860	...	...
Michigan	360	340	10	...
Hardwood total	29,870	18,810	50	...
Minnesota	920	...	...	...
Wisconsin	7,440	18,360	...	...
Michigan	21,510	450	50	...
All species	29,950	18,810	50	...
Minnesota	920	...	...	...
Wisconsin	7,520	18,360	...	...
Michigan	21,510	450	50	...

1/Cottonwood, ash, yellow poplar, and sycamore.

Table 4.--Pulpwood production and imports in the Lake States - 1946

Species and origin	Volume cut and destination					Imports	
	Total	Minnesota	Wisconsin	Michigan	Other U. S.	Other U. S.	Canada and foreign
	M standard cords-unpeeled						
Pine	492	155	283	54	...	9	58
Minnesota	332	155	165	12	...	...	20
Wisconsin	75	...	75	...	...	9	6
Michigan	85	...	43	42	...	...	32
Spruce	416	136	231	40	9	16	609
Minnesota	257	136	112	...	9	...	5
Wisconsin	32	...	32	...	...	16	[1]511
Michigan	127	...	87	40	...	...	93
Balsam	257	61	165	30	1	2	7
Minnesota	93	61	31	...	1	...	...
Wisconsin	47	...	47	...	...	2	([1])
Michigan	117	...	87	30	...	...	7
Tamarack	24	6	16	2	...	...	...
Minnesota	18	6	12	...	...	...	...
Wisconsin	3	...	3	...	...	...	...
Michigan	3	...	1	2	...	...	...
Hemlock	314	...	233	81	...	...	...
Minnesota	...	...	...	...	...	...	...
Wisconsin	64	...	64	...	...	...	...
Michigan	250	...	169	81	...	...	...
Softwood total	1,503	358	928	207	10	27	674
Minnesota	700	358	320	12	10	...	25
Wisconsin	221	...	221	...	...	27	517
Michigan	582	...	387	195	...	...	132
Birch	13	...	13	...	...	...	...
Minnesota	1	...	1	...	...	...	...
Wisconsin	4	...	4	...	...	...	...
Michigan	8	...	8	...	...	...	...
Aspen	713	202	415	55	41	...	19
Minnesota	265	202	56	...	7	...	6
Wisconsin	202	...	202	...	...	...	...
Michigan	246	...	157	55	34	...	13
Misc. Hdwds.	8	...	...	8	...	...	...
Minnesota	...	...	...	...	...	...	...
Wisconsin	...	...	...	...	...	...	...
Michigan	8	...	...	8	...	...	...
Hardwood total	734	202	428	63	41	...	19
Minnesota	266	202	57	...	7	...	6
Wisconsin	206	...	206	...	...	...	...
Michigan	262	...	165	63	34	...	13
Slabs, etc.	8	8	...	...	...	...	...
Minnesota	8	8	...	...	...	...	...
Wisconsin	...	...	...	...	...	...	...
Michigan	...	...	...	...	...	...	...
All species	2,245	568	1,356	270	51	27	693
Minnesota	974	568	377	12	17	...	31
Wisconsin	427	...	427	...	...	27	517
Michigan	844	...	552	258	34	...	145

[1] Spruce and balsam combined.

Table 5.--Production of miscellaneous cordwood in the Lake States - 1946

Species and origin	Volume cut, by states			Species and origin	Volume cut, by states		
	Fuel-wood 1/	Chemical wood	Excelsior		Fuel-wood 1/	Chemical wood	Excelsior
	M standard cords				M standard cords		
White pine	170	...	...	Birch	330	32	...
Minnesota	20	...	...	Minnesota	90	...	...
Wisconsin	100	...	...	Wisconsin	130	2	...
Michigan	50	...	...	Michigan	110	30	...
Red pine	30	...	...	Basswood	160	...	6
Minnesota	10	...	...	Minnesota	80	...	...
Wisconsin	10	...	...	Wisconsin	40	...	6
Michigan	10	...	...	Michigan	40	...	...
Jack pine	155	...	...	Elm	440	6	...
Minnesota	70	...	...	Minnesota	140	...	...
Wisconsin	80	...	...	Wisconsin	100	...	...
Michigan	5	...	...	Michigan	200	6	...
Spruce	45	...	...	Beech	45	8	...
Minnesota	30	...	...	Minnesota	...	...	...
Wisconsin	5	...	...	Wisconsin	5	1	...
Michigan	10	...	...	Michigan	40	7	...
Balsam	50	...	...	Oak	1,190	3	...
Minnesota	40	...	...	Minnesota	240	...	...
Wisconsin	5	...	...	Wisconsin	590	...	...
Michigan	5	...	...	Michigan	360	3	...
Tamarack	290	...	...	Aspen	860	3	90
Minnesota	220	...	...	Minnesota	380	...	3
Wisconsin	60	...	...	Wisconsin	240	3	37
Michigan	10	...	...	Michigan	240	...	50
Cedar	60	...	...	Misc. hdwds.	295	6	...
Minnesota	10	...	...	Minnesota	150	...	...
Wisconsin	40	...	...	Wisconsin	75	...	...
Michigan	10	...	...	Michigan	70	6	...
Hemlock	300	...	...	Hdwd. total	3,900	133	96
Minnesota	...	...	...	Minnesota	1,100	...	3
Wisconsin	200	...	...	Wisconsin	1,400	11	43
Michigan	100	...	...	Michigan	1,400	122	50
Softwd. total	1,100	...	...	Slabs, etc.	670	24	...
Minnesota	400	...	...	Minnesota	120	...	...
Wisconsin	500	...	..	Wisconsin	250	2	...
Michigan	200	...	...	Michigan	300	22	...
Maple	580	75	...	All species	5,670	157	96
Minnesota	20	...	...	Minnesota	1,620	...	3
Wisconsin	220	5	...	Wisconsin	2,150	13	43
Michigan	340	70	...	Michigan	1,900	144	50

1/ Five-year average (1945-49).

Table 6.--Production of miscellaneous piece products in the Lake States - 1946

Species and origin	Piling	Utility poles	Fence posts	Hewn ties	Species and origin	Piling	Utility poles	Fence posts	Hewn ties
	Thousand pieces					Thousand pieces			
White pine	.1	...	...	...	Maple	1	...	400	...
Minnesota	...	...	...	...	Minnesota	...	...	200	...
Wisconsin	.1	...	...	...	Wisconsin	1	...	100	...
Michigan	...	...	...	...	Michigan	...	...	100	...
Red pine	13	5	200	...	Birch	...	...	250	...
Minnesota	12	5	100	...	Minnesota	...	...	50	...
Wisconsin	1	...	100	...	Wisconsin	...	...	100	...
Michigan	...	...	...	...	Michigan	...	...	100	...
Jack pine	3	26	550	...	Elm	1.5	...	450	...
Minnesota	3	25	300	...	Minnesota	...	...	50	...
Wisconsin	...	1	150	...	Wisconsin	1.5	...	200	...
Michigan	...	...	100	...	Michigan	...	...	200	...
Spruce	...	...	...	2	Oak	2.5	...	14,600	...
Minnesota	...	...	...	...	Minnesota	...	...	3,000	...
Wisconsin	...	...	...	...	Wisconsin	2.5	...	7,800	...
Michigan	...	...	...	2	Michigan	...	...	3,800	...
Balsam	...	...	250	...	Aspen	...	...	1,400	...
Minnesota	...	...	200	...	Minnesota	...	...	700	...
Wisconsin	...	...	50	...	Wisconsin	...	...	400	...
Michigan	...	...	...	...	Michigan	...	...	300	...
Tamarack	...	...	750	3	Ash	...	...	...	...
Minnesota	...	...	300	3	Minnesota	...	...	...	...
Wisconsin	...	...	300	...	Wisconsin	...	...	...	...
Michigan	...	...	150	...	Michigan	...	...	...	...
Cedar	...	170	7,400	33	Miscellaneous	[1] .1	...	600	...
Minnesota	...	115	1,000	6	Minnesota	...	...	100	...
Wisconsin	...	10	1,400	5	Wisconsin	.1	...	300	...
Michigan	...	45	5,000	22	Michigan	...	...	200	...
Hemlock	...	...	150	5	Hardwood total	5.1	...	17,700	...
Minnesota	...	...	...	...	Minnesota	...	...	4,100	...
Wisconsin	...	...	100	1	Wisconsin	5.1	...	8,900	...
Michigan	...	...	50	4	Michigan	...	...	4,700	...
Softwood total	16.1	201	9,300	43	All species	21.2	201	27,000	43
Minnesota	15	145	1,900	9	Minnesota	15	145	6,000	9
Wisconsin	1.1	11	2,100	6	Wisconsin	6.2	11	11,000	6
Michigan	...	45	5,300	28	Michigan	...	45	10,000	28

[1] Hickory.

Table 7.--Production of mining materials in the Lake States - 1946

Species and origin	Volume of logs and bolts cut by states				Species and origin	Volume of logs and bolts cut by states			
	Total	Mine timbers	Mine lagging	Other 1/		Total	Mine timbers	Mine lagging	Other 1/
	Thousand cubic feet					Thousand cubic feet			
White pine	10	10	...	...	Maple	980	740	...	240
Minnesota	10	10	...	...	Minnesota	15	15	...	...
Wisconsin	..	..	...	...	Wisconsin	50	35	...	15
Michigan	..	..	...	...	Michigan	915	690	...	225
Red pine	55	50	...	5	Birch	300	260	...	40
Minnesota	55	50	...	5	Minnesota	5	5	...	...
Wisconsin	...	...	...	...	Wisconsin	25	20	...	5
Michigan	...	...	...	...	Michigan	270	235	...	35
Jack pine	710	515	110	85	Elm	85	75	...	10
Minnesota	710	515	110	85	Minnesota	25	25	...	...
Wisconsin	...	...	...	...	Wisconsin	10	10	...	...
Michigan	...	...	...	...	Michigan	50	40	...	10
Spruce	5	...	...	5	Beech	60	55	...	5
Minnesota	...	...	...	...	Minnesota	...	...	...	...
Wisconsin	...	...	...	...	Wisconsin	...	...	...	...
Michigan	5	...	...	5	Michigan	60	55	...	5
Tamarack	1,345	235	145	965	Oak	10	10	...	...
Minnesota	650	200	...	450	Minnesota	...	...	...	...
Wisconsin	100	5	...	95	Wisconsin	5	5	...	...
Michigan	595	30	145	420	Michigan	5	5	...	...
Cedar	1,160	...	1,155	5	Ash	40	40	...	...
Minnesota	200	...	200	...	Minnesota	40	40	...	...
Wisconsin	60	...	60	...	Wisconsin	...	...	...	...
Michigan	900	...	895	5	Michigan	...	...	...	...
Hemlock	220	205	...	15	Hdwd. total	1,475	1,180	...	295
Minnesota	...	...	...	...	Minnesota	85	85	...	...
Wisconsin	5	5	...	...	Wisconsin	90	70	...	20
Michigan	215	200	...	15	Michigan	1,300	1,025	...	275
Sftwd. total	3,505	1,015	1,410	1,080	All species	4,980	2,195	1,410	1,375
Minnesota	1,625	775	310	540	Minnesota	1,710	860	310	540
Wisconsin	165	10	60	95	Wisconsin	255	80	60	115
Michigan	1,715	230	1,040	445	Michigan	3,015	1,255	1,040	720

1/ Mine cribbing, poles, trestle logs, hewed shaft timbers, smelter brands, etc.

Table 8.--Production of cooperage logs and bolts in the Lake States - 1946

Species	Total	Volume cut, by states		
		Minnesota	Wisconsin	Michigan
	M bd. ft., Int'l. 1/4-inch rule			
Maple..............	50	50	...	...
Basswood............	930	200	730	...
Elm................	1,210	1,200	10	...
Oak................	680	450	230	...
Aspen..............	1,100	300	800	...
Cottonwood..........	350	350	...	...
Ash................	50	50	...	...
All species.........	4,370	2,600	1,770	...

Table 9.--Production of miscellaneous products[1] in the Lake States - 1946
(Five-year average 1945-49)

Species	Total	Volume cut, by states		
		Minnesota	Wisconsin	Michigan
	Thousand cubic feet			
White pine..........	180	60	60	60
Red pine............	90	40	20	30
Jack pine...........	210	90	40	80
Spruce..............	50	20	10	20
Balsam..............	140	50	20	70
Tamarack............	50	20	10	20
Cedar...............	690	90	160	440
Hemlock.............	40	...	20	20
Total softwoods....	1,450	370	340	740
Maple...............	410	...	90	320
Birch...............	360	320	30	10
Basswood............	150	60	70	20
Elm.................	80	...	...	...
Beech...............	670	...	...	670
Oak.................	100	10	10	80
Aspen...............	1,670	1,110	380	180
Ash.................	10	...	...	10
Other...............	70	...	20	50
Total hardwoods...	3,520	1,500	600	1,420
All species.........	4,970	1,870	940	2,160

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[1] Rough forest products used for manufacture of matches, clothespins, bowling pins, handles, woodenware, rustic furniture, toys, shingles, lath, log cabin material, etc.

Table 10.--Sawlog and box-bolt timber drain in the Lake States - 1946

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine....	47,780	13,090	47,780	9,830	3,260
Minnesota...	8,470	3,220	8,470	1,740	1,480
Wisconsin...	21,230	5,370	21,230	4,370	1,000
Michigan....	18,080	4,500	18,080	3,720	780
Red pine......	41,970	12,690	41,970	8,640	4,050
Minnesota...	16,380	6,240	16,380	3,370	2,870
Wisconsin...	17,790	4,500	17,790	3,660	840
Michigan....	7,800	1,950	7,800	1,610	340
Jack pine.....	47,680	16,090	47,680	9,830	6,260
Minnesota...	31,640	12,060	31,640	6,520	5,540
Wisconsin...	5,480	1,390	5,480	1,130	260
Michigan....	10,560	2,640	10,560	2,180	460
Spruce.........	7,690	2,170	7,690	1,580	590
Minnesota...	1,950	740	1,950	400	340
Wisconsin...	1,170	290	1,170	240	50
Michigan....	4,570	1,140	4,570	940	200
Balsam........	2,660	800	2,660	550	250
Minnesota...	950	370	950	200	170
Wisconsin...	750	190	750	150	40
Michigan....	960	240	960	200	40
Tamarack......	3,180	970	3,180	660	310
Minnesota...	1,180	450	1,180	240	210
Wisconsin...	1,190	310	1,190	250	60
Michigan....	810	210	810	170	40
Cedar.........	5,870	1,520	5,870	1,210	310
Minnesota...	470	180	470	100	80
Wisconsin...	690	170	690	140	30
Michigan....	4,710	1,170	4,710	970	200
Hemlock.......	164,790	41,280	164,790	33,940	7,340
Minnesota...	...	...	...	...	...
Wisconsin...	52,790	13,370	52,790	10,870	2,500
Michigan....	112,000	27,910	112,000	23,070	4,840
Softwood total	321,620	88,610	321,620	66,240	22,370
Minnesota...	61,040	23,260	61,040	12,570	10,690
Wisconsin...	101,090	25,590	101,090	20,810	4,780
Michigan....	159,490	39,760	159,490	32,860	6,900

Table 10.--Sawlog and box-bolt timber drain in the Lake States - 1946 (continued)

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple.........	195,950	52,870	195,950	46,640	6,230
Minnesota...	700	230	700	170	60
Wisconsin...	43,750	11,790	43,750	10,410	1,380
Michigan....	151,500	40,850	151,500	36,060	4,790
Birch.........	64,240	17,360	64,240	15,290	2,070
Minnesota...	860	270	860	200	70
Wisconsin...	17,390	4,690	17,390	4,140	550
Michigan....	45,990	12,400	45,990	10,950	1,450
Basswood......	36,450	10,130	36,450	8,670	1,460
Minnesota...	6,150	1,960	6,150	1,460	500
Wisconsin...	16,010	4,320	16,010	3,810	510
Michigan....	14,290	3,850	14,290	3,400	450
Elm...........	53,630	14,880	53,630	12,770	2,110
Minnesota...	8,300	2,660	8,300	1,980	680
Wisconsin...	21,500	5,800	21,500	5,120	680
Michigan....	23,830	6,420	23,830	5,670	750
Beech.........	21,890	5,900	21,890	5,210	690
Minnesota...	...	...	...	...	...
Wisconsin...	550	150	550	130	20
Michigan....	21,340	5,750	21,340	5,080	670
Oak...........	92,770	25,440	92,770	22,070	3,370
Minnesota...	8,730	2,790	8,730	2,080	710
Wisconsin...	56,330	15,180	56,330	13,400	1,780
Michigan....	27,710	7,470	27,710	6,590	880
Aspen.........	70,450	38,800	70,450	17,510	21,290
Minnesota...	35,650	16,170	35,650	8,910	7,260
Wisconsin...	18,470	13,450	18,470	4,620	8,830
Michigan....	16,330	9,180	16,330	3,980	5,200
Cottonwood....	8,590	2,590	8,590	2,040	550
Minnesota...	5,540	1,770	5,540	1,320	450
Wisconsin...	1,110	300	1,110	260	40
Michigan....	1,940	520	1,940	460	60
Miscellaneous	18,370	5,030	18,370	4,370	660
Minnesota...	1,590	510	1,590	380	130
Wisconsin...	6,970	1,870	6,970	1,650	220
Michigan....	9,810	2,650	9,810	2,340	310
Hardwood total	562,340	173,000	562,340	134,570	38,430
Minnesota...	67,520	26,360	67,520	16,500	9,860
Wisconsin...	182,080	57,550	182,080	43,540	14,010
Michigan....	312,740	89,090	312,740	74,530	14,560
All species...	883,960	261,610	883,960	200,810	60,800
Minnesota...	128,560	49,620	128,560	29,070	20,550
Wisconsin...	283,170	83,140	283,170	64,350	18,790
Michigan....	472,230	128,850	472,230	107,390	21,460

NOTE - Miscellaneous species:	Ash	Cherry	Hickory	Walnut	Other
Minnesota (percent)	85				15
Wisconsin (percent)	80	1	1	1	17
Michigan (percent)	55	6	5	3	31

Table 11.--Veneer log (commercial) timber drain in the Lake States - 1946

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine....	820	160	820	160	...
Minnesota...	30	10	30	10	...
Wisconsin...	130	20	130	20	...
Michigan....	660	130	660	130	...
Softwood total	820	160	820	160	...
Minnesota...	30	10	30	10	...
Wisconsin...	130	20	130	20	...
Michigan....	660	130	660	130	...
Maple.........	34,390	6,590	34,390	6,560	30
Minnesota...	...	...	...	...	...
Wisconsin...	6,850	1,270	6,850	1,240	30
Michigan....	27,540	5,320	27,540	5,320	...
Birch.........	26,160	5,020	26,160	5,000	20
Minnesota...	310	60	310	60	...
Wisconsin...	4,230	790	4,230	770	20
Michigan....	21,620	4,170	21,620	4,170	...
Basswood......	8,650	1,630	8,650	1,610	20
Minnesota...	830	160	830	160	...
Wisconsin...	4,660	860	4,660	840	20
Michigan....	3,160	610	3,160	610	...
Elm...........	6,670	1,270	6,670	1,250	20
Minnesota...	250	50	250	50	...
Wisconsin...	3,310	620	3,310	600	20
Michigan....	3,110	600	3,110	600	...
Beech.........	2,700	520	2,700	520	...
Minnesota...	...	...	...	...	...
Wisconsin...	...	...	...	...	...
Michigan....	2,700	520	2,700	520	...
Oak...........	2,710	510	2,710	500	10
Minnesota...	...	...	...	...	...
Wisconsin...	2,080	390	2,080	380	10
Michigan....	630	120	630	120	...
Aspen.........	220	80	220	60	20
Minnesota...	...	...	...	...	...
Wisconsin...	190	70	190	50	20
Michigan....	30	10	30	10	...
Cottonwood....	70	10	70	10	...
Minnesota...	70	10	70	10	...
Wisconsin...	...	...	...	...	...
Michigan....	...	...	...	...	...
Miscellaneous.	2,650	510	2,650	510	...
Minnesota...	150	30	150	30	...
Wisconsin...	930	170	930	170	...
Michigan....	1,570	310	1,570	310	...
Hardwood total	84,220	16,140	84,220	16,020	120
Minnesota...	1,610	310	1,610	310	...
Wisconsin...	22,250	4,170	22,250	4,050	120
Michigan....	60,360	11,660	60,360	11,660	...
All species...	85,040	16,300	85,040	16,180	120
Minnesota...	1,640	320	1,640	320	...
Wisconsin...	22,380	4,190	22,380	4,070	120
Michigan....	61,020	11,790	61,020	11,790	...

NOTE: Miscellaneous species:

	Ash	Walnut	Other
Minnesota (percent)	60	40	..
Wisconsin (percent)	70	20	10
Michigan (percent)	90	5	5

Table 12.--Veneer logs and bolts (container) timber drain in the Lake States - 1946

Species and origin	Net timber drain, by size class					Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees		Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.		M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine...	80	10	80	10	...	Oak..........	700	140	700	140	...
Minnesota..	...	...	...	...	...	Minnesota...	...	...	...	...	...
Wisconsin..	80	10	80	10	...	Wisconsin...	70	10	70	10	...
Michigan...	...	...	...	...	...	Michigan....	630	130	630	130	...
Softwood total	80	10	80	10	...	Aspen.........	1,430	1,370	1,430	320	1,050
Minnesota..	...	...	...	...	...	Minnesota...	130	40	130	30	10
Wisconsin..	80	10	80	10	...	Wisconsin...	920	1,230	920	190	1,040
Michigan...	...	...	...	...	...	Michigan....	380	100	380	100	...
Maple........	9,380	2,075	9,380	1,990	85	Cottonwood....	350	75	350	70	5
Minnesota..	80	25	80	20	5	Minnesota...	120	25	120	20	5
Wisconsin..	1,170	310	1,170	250	60	Wisconsin...	...	...	...	...	...
Michigan...	8,130	1,740	8,130	1,720	20	Michigan....	230	50	230	50	...
Birch........	1,460	315	1,460	300	15	Miscellaneous	840	200	840	170	30
Minnesota..	110	25	110	20	5	Minnesota...	...	...	...	...	...
Wisconsin..	150	40	150	30	10	Wisconsin...	540	140	540	110	30
Michigan...	1,200	250	1,200	250	...	Michigan....	300	60	300	60	...
Basswood.....	3,120	760	3,120	660	100	Hardwood total	33,270	8,590	33,270	7,030	1,560
Minnesota..	290	70	290	60	10	Minnesota...	820	210	820	170	40
Wisconsin..	1,770	470	1,770	380	90	Wisconsin...	9,620	3,500	9,620	2,030	1,470
Michigan...	1,060	220	1,060	220	...	Michigan....	22,830	4,880	22,830	4,830	50
Elm..........	12,440	2,905	12,440	2,640	265	All species...	33,350	8,600	33,350	7,040	1,560
Minnesota..	90	25	90	20	5	Minnesota...	820	210	820	170	40
Wisconsin..	4.980	1,300	4,980	1,060	240	Wisconsin...	9,700	3,510	9,700	2,040	1,470
Michigan...	7,370	1,580	7,370	1,560	20	Michigan....	22,830	4,880	22,830	4,830	50
Beech........	3,550	750	3,550	740	10						
Minnesota...	...	...	...	...	...						
Wisconsin...	20	...	20	...	...						
Michigan....	3,530	750	3,530	740	10						

NOTE - Miscellaneous species:	Ash	Sycamore	Yellow poplar
Wisconsin (percent)	100		
Michigan (percent)	25	25	50

Table 13.--Pulpwood timber drain in the Lake States - 1946

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine.......	35	110	35	10	100
Minnesota......	...	...	...	...	...
Wisconsin......	20	65	20	5	60
Michigan.......	15	45	15	5	40
Red pine.........	35	110	35	10	100
Minnesota......	...	...	...	...	...
Wisconsin......	20	65	20	5	60
Michigan.......	15	45	15	5	40
Jack pine........	13,740	36,270	13,740	2,630	33,640
Minnesota......	9,880	24,930	9,880	1,890	23,040
Wisconsin......	1,790	5,810	1,790	350	5,460
Michigan.......	2,070	5,530	2,070	390	5,140
Spruce...........	11,580	30,230	11,580	2,210	28,020
Minnesota......	7,650	19,310	7,650	1,470	17,840
Wisconsin......	770	2,500	770	150	2,350
Michigan.......	3,160	8,420	3,160	590	7,830
Balsam...........	6,830	18,460	6,830	1,290	17,170
Minnesota......	2,770	6,980	2,770	530	6,450
Wisconsin......	1,150	3,730	1,150	220	3,510
Michigan.......	2,910	7,750	2,910	540	7,210
Tamarack.........	690	1,810	690	140	1,670
Minnesota......	550	1,400	550	110	1,290
Wisconsin......	60	190	60	10	180
Michigan.......	80	220	80	20	200
Cedar............	...	...	...	...	...
Minnesota......	...	...	...	...	...
Wisconsin......	...	...	...	...	...
Michigan.......	...	...	...	...	...
Hemlock..........	84,420	24,180	84,420	16,280	7,900
Minnesota......	...	...	...	...	...
Wisconsin......	1,390	5,020	1,390	270	4,750
Michigan.......	83,030	19,160	83,030	16,010	3,150
Softwood total...	117,330	111,170	117,330	22,570	88,600
Minnesota......	20,850	52,620	20,850	4,000	48,620
Wisconsin......	5,200	17,380	5,200	1,010	16,370
Michigan.......	91,280	41,170	91,280	17,560	23,610

Table 13.--Pulpwood timber drain in the Lake States - 1946 (continued)

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple............	270	230	270	60	170
Minnesota......	...	...	...	...	...
Wisconsin......	...	...	...	...	...
Michigan.......	270	230	270	60	170
Birch............	1,180	1,330	1,180	270	1,060
Minnesota......	80	110	80	20	90
Wisconsin......	130	400	130	30	370
Michigan.......	970	820	970	220	600
Basswood.........	80	70	80	20	50
Minnesota......	...	...	...	...	...
Wisconsin......	...	...	...	...	...
Michigan.......	80	70	80	20	50
Elm..............	160	140	160	40	100
Minnesota......	...	...	...	...	...
Wisconsin......	...	...	...	...	...
Michigan.......	160	140	160	40	100
Beech............	20	10	20	...	10
Minnesota......	...	...	...	...	...
Wisconsin......	...	...	...	...	...
Michigan.......	20	10	20	...	10
Oak..............	210	180	210	50	130
Minnesota......	...	...	...	...	...
Wisconsin......	...	...	...	...	...
Michigan.......	210	180	210	50	130
Aspen............	21,310	60,540	21,310	5,110	55,430
Minnesota......	13,720	22,460	13,720	3,300	19,160
Wisconsin......	4,190	17,150	4,190	990	16,160
Michigan.......	3,400	20,930	3,400	820	20,110
Cottonwood.......	...	...	...	...	...
Minnesota......	...	...	...	...	...
Wisconsin......	...	...	...	...	...
Michigan.......	...	...	...	...	...
Miscellaneous....	...	10	...	...	10
Minnesota......	...	...	...	...	...
Wisconsin......	...	10	...	...	10
Michigan.......	...	...	...	...	...
Hardwood total...	23,230	62,510	23,230	5,550	56,960
Minnesota......	13,800	22,570	13,800	3,320	19,250
Wisconsin......	4,320	17,560	4,320	1,020	16,540
Michigan.......	5,110	22,380	5,110	1,210	21,170
All species......	140,560	173,680	140,560	28,120	145,560
Minnesota......	34,650	75,190	34,650	7,320	67,870
Wisconsin......	9,520	34,940	9,520	2,030	32,910
Michigan.......	96,390	63,550	96,390	18,770	44,780

NOTE: Miscellaneous species - Wisconsin - Ash 100 percent.

Table 14.--Annual fuelwood timber drain in the Lake States (5-year average 1945-49)

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine.........	930	1,540	930	750	790
Minnesota.......	110	210	110	120	90
Wisconsin.......	450	870	450	390	480
Michigan........	370	460	370	240	220
Red pine...........	170	280	170	150	130
Minnesota.......	60	100	60	60	40
Wisconsin.......	40	90	40	40	50
Michigan........	70	90	70	50	40
Jack pine..........	800	1,460	800	750	710
Minnesota.......	400	720	400	420	300
Wisconsin.......	360	700	360	310	390
Michigan........	40	40	40	20	20
Spruce.............	260	440	260	250	190
Minnesota.......	170	310	170	180	130
Wisconsin	20	40	20	20	20
Michigan........	70	90	70	50	40
Balsam............	290	490	290	280	210
Minnesota.......	230	410	230	240	170
Wisconsin.......	20	40	20	20	20
Michigan........	40	40	40	20	20
Tamarack...........	1,580	2,950	1,580	1,670	1,280
Minnesota.......	1,240	2,330	1,240	1,380	950
Wisconsin.......	270	530	270	240	290
Michigan........	70	90	70	50	40
Cedar..............	310	540	310	270	270
Minnesota.......	60	100	60	60	40
Wisconsin.......	180	350	180	160	190
Michigan........	70	90	70	50	40
Hemlock............	1,640	2,680	1,640	1,260	1,420
Minnesota.......	...	...	...	...	...
Wisconsin.......	900	1,750	900	780	970
Michigan........	740	930	740	480	450
Softwood total.....	5,980	10,380	5,980	5,380	5,000
Minnesota.......	2,270	4,180	2,270	2,460	1,720
Wisconsin.......	2,240	4,370	2,240	1,960	2,410
Michigan........	1,470	1,830	1,470	960	870

Table 14.--Annual fuelwood timber drain in the Lake States (5-year average 1945-49) (continued)

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M bd.ft.
Maple..............	19,960	16,150	19,960	9,150	7,000
Minnesota.......	700	460	700	330	130
Wisconsin.......	7,850	5,870	7,850	3,390	2,480
Michigan........	11,410	9,820	11,410	5,430	4,390
Birch..............	11,950	8,770	11,950	5,270	3,500
Minnesota.......	3,660	2,120	3,660	1,510	610
Wisconsin.......	4,600	3,470	4,600	2,000	1,470
Michigan........	3,690	3,180	3,690	1,760	1,420
Basswood...........	5,570	4,100	5,570	2,600	1,500
Minnesota........	2,800	1,870	2,800	1,340	530
Wisconsin........	1,430	1,070	1,430	620	450
Michigan.........	1,340	1,160	1,340	640	520
Elm................	15,180	11,720	15,180	7,070	4,650
Minnesota.......	4,900	3,280	4,900	2,340	940
Wisconsin.......	3,570	2,670	3,570	1,540	1,130
Michigan........	6,710	5,770	6,710	3,190	2,580
Beech..............	1,520	1,300	1,520	720	580
Minnesota.......	...	...	...	...	...
Wisconsin.......	180	140	180	80	60
Michigan........	1,340	1,160	1,340	640	520
Oak................	41,540	31,720	41,540	18,840	12,880
Minnesota.......	8,400	5,600	8,400	4,000	1,600
Wisconsin.......	21,060	15,730	21,060	9,090	6,640
Michigan........	12,080	10,390	12,080	5,750	4,640
Aspen..............	19,260	32,240	19,260	8,860	23,380
Minnesota.......	9,450	14,780	9,450	4,750	10,030
Wisconsin.......	3,020	8,680	3,020	1,350	7,330
Michigan........	6,790	8,780	6,790	2,760	6,020
Miscellaneous......	10,280	7,550	10,280	4,790	2,760
Minnesota.......	5,250	3,520	5,250	2,510	1,010
Wisconsin.......	2,680	2,010	2,680	1,160	850
Michigan........	2,350	2,020	2,350	1,120	900
Hardwood total.....	125,260	113,550	125,260	57,300	56,250
Minnesota.......	35,160	31,630	35,160	16,780	14,850
Wisconsin.......	44,390	39,640	44,390	19,230	20,410
Michigan........	45,710	42,280	45,710	21,290	20,990
All species........	131,240	123,930	131,240	62,680	61,250
Minnesota.......	37,430	35,810	37,430	19,240	16,570
Wisconsin.......	46,630	44,010	46,630	21,190	22,820
Michigan........	47,180	44,110	47,180	22,250	21,860

Table 15.--Piling timber drain in the Lake States - 1946

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine........	15	5	15	5	...
Minnesota......	...	...	...	...	...
Wisconsin......	15	5	15	5	...
Michigan.......	...	...	...	...	...
Red pine..........	1,655	330	1,655	330	...
Minnesota......	1,550	310	1,550	310	...
Wisconsin......	105	20	105	20	...
Michigan.......	...	...	...	...	...
Jack pine.........	360	70	360	70	...
Minnesota......	360	70	360	70	...
Wisconsin......	...	...	...	...	...
Michigan.......	...	...	...	...	...
Softwood total....	2,030	405	2,030	405	...
Minnesota......	1,910	380	1,910	380	...
Wisconsin......	120	25	120	25	...
Michigan.......	...	...	...	...	...
Maple.............	120	30	120	30	...
Minnesota......	...	...	...	...	...
Wisconsin......	120	30	120	30	...
Michigan.......	...	...	...	...	...
Elm...............	140	35	140	35	...
Minnesota......	...	...	...	...	...
Wisconsin......	140	35	140	35	...
Michigan.......	...	...	...	...	...
Oak...............	260	60	260	60	...
Minnesota......	...	...	...	...	...
Wisconsin......	260	60	260	60	...
Michigan.......	...	...	...	...	...
Miscellaneous.....	10	...	10	...	...
Minnesota......	...	...	...	...	...
Wisconsin......	10	...	10	...	...
Michigan.......	...	...	...	...	...
Hardwood total....	530	125	530	125	...
Minnesota......	...	...	...	...	...
Wisconsin......	530	125	530	125	...
Michigan.......	...	...	...	...	...
All species.......	2,560	530	2,560	530	...
Minnesota......	1,910	380	1,910	380	...
Wisconsin......	650	150	650	150	...
Michigan.......	...	...	...	...	...

NOTE: Miscellaneous species - Wisconsin, Hickory 100 percent.

Table 16.--Chemical-wood timber drain in the Lake States - 1946

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu. ft.
Maple.............	13,230	3,570	13,230	3,160	410
Minnesota......	...	...	...	...	...
Wisconsin......	860	240	860	210	30
Michigan.......	12,370	3,330	12,370	2,950	380
Birch.............	5,720	1,540	5,720	1,360	180
Minnesota......	...	...	...	...	...
Wisconsin......	320	90	320	80	10
Michigan.......	5,400	1,450	5,400	1,280	170
Elm..............	1,000	270	1,000	240	30
Minnesota......	...	...	...	...	...
Wisconsin......	...	...	...	...	...
Michigan.......	1,000	270	1,000	240	30
Beech.............	1,330	370	1,330	320	50
Minnesota......	...	...	...	...	...
Wisconsin......	190	60	190	50	10
Michigan.......	1,140	310	1,140	270	40
Oak..............	570	160	570	140	20
Minnesota......	...	...	...	...	...
Wisconsin......	40	10	40	10	...
Michigan.......	530	150	530	130	20
Aspen............	530	150	530	130	20
Minnesota......	...	...	...	...	...
Wisconsin......	530	150	530	130	20
Michigan.......	...	...	...	...	...
Miscellaneous.....	1,020	280	1,020	250	30
Minnesota......	...	...	...	...	...
Wisconsin......	40	10	40	10	...
Michigan.......	980	270	980	240	30
Hardwood total....	23,400	6,340	23,400	5,600	740
Minnesota......	...	...	...	...	...
Wisconsin......	1,980	560	1,980	490	70
Michigan.......	21,420	5,780	21,420	5,110	670
All species.......	23,400	6,340	23,400	5,600	740
Minnesota......	...	...	...	...	...
Wisconsin......	1,980	560	1,980	490	70
Michigan.......	21,420	5,780	21,420	5,110	670

NOTE: Miscellaneous species -	Ash	Cherry
Wisconsin (percent)	100	
Michigan (percent)	95	5

Table 17.--Excelsior timber drain in the Lake States - 1946

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd. ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Basswood...........	115	475	115	35	440
Minnesota.......	15	25	15	5	20
Wisconsin.......	100	450	100	30	420
Michigan........	...	...	...	..	...
Aspen.............	475	7,170	475	130	7,040
Minnesota.......	80	240	80	20	220
Wisconsin.......	290	2,930	290	80	2,850
Michigan........	105	4,000	105	30	3,970
Hardwood total.....	590	7,645	590	165	7,480
Minnesota.......	95	265	95	25	240
Wisconsin.......	390	3,380	390	110	3,270
Michigan........	105	4,000	105	30	3,970
All species........	590	7,645	590	165	7,480
Minnesota.......	95	265	95	25	240
Wisconsin.......	390	3,380	390	110	3,270
Michigan........	105	4,000	105	30	3,970

Table 18.--Annual fence-post timber drain in the Lake States (5-year average 1945-49)

Species and origin	Net timber drain, by size class: Total		Saw-timber trees		Pole-timber trees	Species and origin	Net timber drain, by size class: Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.		M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Red pine	120	100	120	20	80	Maple	250	450	250	80	370
Minnesota	60	50	60	10	40	Minnesota	130	230	130	40	190
Wisconsin	60	50	60	10	40	Wisconsin	60	110	60	20	90
Michigan	...	...	...	...	...	Michigan	60	110	60	20	90
Jack pine	320	280	320	70	210	Birch	150	280	150	50	230
Minnesota	170	150	170	40	110	Minnesota	30	60	30	10	50
Wisconsin	90	80	90	20	60	Wisconsin	60	110	60	20	90
Michigan	60	50	60	10	40	Michigan	60	110	60	20	90
Balsam	140	140	140	40	100	Elm	290	520	290	90	430
Minnesota	110	110	110	30	80	Minnesota	30	60	30	10	50
Wisconsin	30	30	30	10	20	Wisconsin	130	230	130	40	190
Michigan	...	...	...	...	...	Michigan	130	230	130	40	190
Tamarack	430	400	430	100	300	Oak	9,150	16,510	9,150	2,690	13,820
Minnesota	170	150	170	40	110	Minnesota	1,880	3,410	1,880	550	2,860
Wisconsin	170	170	170	40	130	Wisconsin	4,890	8,810	4,890	1,440	7,370
Michigan	90	80	90	20	60	Michigan	2,380	4,290	2,380	700	3,590
Cedar	4,200	3,960	4,200	900	3,060	Aspen	880	1,540	880	260	1,280
Minnesota	570	510	570	130	380	Minnesota	440	800	440	130	670
Wisconsin	790	760	790	170	590	Wisconsin	250	450	250	70	380
Michigan	2,840	2,690	2,840	600	2,090	Michigan	190	290	190	60	230
Hemlock	90	80	90	20	60	Miscellaneous	380	690	380	120	570
Minnesota	...	...	...	...	...	Minnesota	60	120	60	20	100
Wisconsin	60	50	60	10	40	Wisconsin	190	340	190	60	280
Michigan	30	30	30	10	20	Michigan	130	230	130	40	190
Softwood total	5,300	4,960	5,300	1,150	3,810	Hardwood total	11,100	19,990	11,100	3,290	16,700
Minnesota	1,080	970	1,080	250	720	Minnesota	2,570	4,680	2,570	760	3,920
Wisconsin	1,200	1,140	1,200	260	880	Wisconsin	5,580	10,050	5,580	1,650	8,400
Michigan	3,020	2,850	3,020	640	2,210	Michigan	2,950	5,260	2,950	880	4,380
						All species	16,400	24,950	16,400	4,440	20,510
						Minnesota	3,650	5,650	3,650	1,010	4,640
						Wisconsin	6,780	11,190	6,780	1,910	9,280
						Michigan	5,970	8,110	5,970	1,520	6,590

Table 19.--Utility pole timber drain in the Lake States - 1946

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Red pine...........	280	75	280	60	15
Minnesota........	280	75	280	60	15
Wisconsin........	...	...	...	...	...
Michigan.........	...	...	...	...	...
Jack pine..........	1,530	390	1,530	325	65
Minnesota........	1,510	380	1,510	320	60
Wisconsin........	20	10	20	5	5
Michigan.........	...	...	...	...	...
Cedar..............	3,280	1,370	3,280	810	560
Minnesota........	2,370	940	2,370	590	350
Wisconsin........	210	80	210	50	30
Michigan.........	700	350	700	170	180
Softwood total.....	5,090	1,835	5,090	1,195	640
Minnesota.........	4,160	1,395	4,160	970	425
Wisconsin.........	230	90	230	55	35
Michigan..........	700	350	700	170	180
All species........	5,090	1,835	5,090	1,195	640
Minnesota.........	4,160	1,395	4,160	970	425
Wisconsin.........	230	90	230	55	35
Michigan..........	700	350	700	170	180

Table 20.--Hewed ties timber drain in the Lake States - 1946

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Spruce	10	..	10	..	..
Minnesota	..	..	..	..	..
Wisconsin	..	..	..	..	..
Michigan	10	..	10	..	..
Tamarack	10	5	10	..	5
Minnesota	10	5	10	..	5
Wisconsin	..	..	..	..	..
Michigan	..	..	..	..	..
Cedar	105	50	105	25	25
Minnesota	20	10	20	5	5
Wisconsin	15	10	15	5	5
Michigan	70	30	70	15	15
Hemlock	20	10	20	5	5
Minnesota	..	..	..	..	..
Wisconsin	5	..	5	..	..
Michigan	15	10	15	5	5
Softwood total	145	65	145	30	35
Minnesota	30	15	30	5	10
Wisconsin	20	10	20	5	5
Michigan	95	40	95	20	20
All species	145	65	145	30	35
Minnesota	30	15	30	5	10
Wisconsin	20	10	20	5	5
Michigan	95	40	95	20	20

Table 21.--Mine material timber drain in the Lake States - 1946

Species and origin	Net timber drain, by size class					Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees		Total		Saw-timber trees		Pole-timber drain
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.		M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine.....	45	10	45	10	...	Maple..........	4,000	1,375	4,000	1,030	345
Minnesota...	45	10	45	10	...	Minnesota...	85	25	85	25	...
Wisconsin...	...	...	...	...	...	Wisconsin...	175	70	175	45	25
Michigan....	...	...	...	...	...	Michigan....	3,740	1,280	3,740	960	320
Red pine.......	205	55	205	45	10	Birch..........	1,225	425	1,225	320	105
Minnesota...	205	55	205	45	10	Minnesota...	30	10	30	10	...
Wisconsin...	...	...	...	...	...	Wisconsin...	90	35	90	25	10
Michigan....	...	...	...	...	...	Michigan....	1,105	380	1,105	285	95
Jack pine......	3,265	695	3,265	590	105	Elm............	385	125	385	105	20
Minnesota...	3,265	695	3,265	590	105	Minnesota...	140	40	140	40	...
Wisconsin...	...	...	...	...	...	Wisconsin...	35	15	35	10	5
Michigan....	...	...	...	...	...	Michigan....	210	70	210	55	15
Spruce.........	5	...	5	...	...	Beech..........	250	85	250	65	20
Minnesota...	...	...	...	...	...	Minnesota...	...	...	...	...	...
Wisconsin...	...	...	...	...	...	Wisconsin...	...	...	...	...	...
Michigan....	5	...	5	...	...	Michigan....	250	85	250	65	20
Tamarack.......	3,205	1,160	3,205	735	425	Oak............	40	15	40	10	5
Minnesota...	2,485	640	2,485	540	100	Minnesota...	...	...	...	...	...
Wisconsin...	65	85	65	20	65	Wisconsin...	20	10	20	5	5
Michigan....	655	435	655	175	260	Michigan....	20	5	20	5	...
Cedar..........	1,815	910	1,815	445	465	Miscellaneous..	220	60	220	60	...
Minnesota...	780	200	780	170	30	Minnesota...	220	60	220	60	...
Wisconsin...	40	50	40	10	40	Wisconsin...	...	...	...	...	...
Michigan....	995	660	995	265	395	Michigan....	...	...	...	...	...
Hemlock........	245	165	245	65	100	Hardwood total	6,120	2,085	6,120	1,590	495
Minnesota...	...	...	...	...	...	Minnesota...	475	135	475	135	...
Wisconsin...	5	5	5	...	5	Wisconsin...	320	130	320	85	45
Michigan....	240	160	240	65	95	Michigan....	5,325	1,820	5,325	1,370	450
Softwood total	8,785	2,995	8,785	1,890	1,105	All species....	14,905	5,080	14,905	3,480	1,600
Minnesota...	6,780	1,600	6,780	1,355	245	Minnesota...	7,255	1,735	7,255	1,490	245
Wisconsin...	110	140	110	30	110	Wisconsin...	430	270	430	115	155
Michigan....	1,895	1,255	1,895	505	750	Michigan....	7,220	3,075	7,220	1,875	1,200

Table 22.--Cooperage timber drain in the Lake States - 1946

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple..........	50	10	50	10	...
Minnesota....	50	10	50	10	...
Wisconsin....	..	..	..	..	...
Michigan.....	..	..	..	..	...
Basswood........	660	200	660	150	50
Minnesota....	200	40	200	40	...
Wisconsin....	460	160	460	110	50
Michigan.....	...	...	...	...	...
Elm.............	1,225	270	1,225	270	...
Minnesota....	1,215	270	1,215	270	...
Wisconsin....	10	...	10	...	...
Michigan.....	...	...	...	...	...
Oak.............	595	160	595	140	20
Minnesota....	455	100	455	100	...
Wisconsin....	140	60	140	40	20
Michigan.....	...	...	...	...	...
Aspen...........	465	270	465	120	150
Minnesota....	305	80	305	80	...
Wisconsin....	160	190	160	40	150
Michigan.....	...	...	...	...	...
Cottonwood......	355	80	355	80	...
Minnesota....	355	80	355	80	...
Wisconsin....	...	...	...	...	...
Michigan.....	...	...	...	...	...
Miscellaneous...	50	10	50	10	...
Minnesota....	50	10	50	10	...
Wisconsin....	...	...	...	...	...
Michigan.....	...	...	...	...	...
Hardwood total..	3,400	1,000	3,400	780	220
Minnesota....	2,630	590	2,630	590	...
Wisconsin....	770	410	770	190	220
Michigan.....	...	...	...	...	...
All species.....	3,400	1,000	3,400	780	220
Minnesota....	2,630	590	2,630	590	...
Wisconsin....	770	410	770	190	220
Michigan....	...	...	...	...	...

NOTE: Miscellaneous species - Minnesota, Ash 100 percent.

[illegible]

[illegible]

[illegible]

Table 23.--Annual miscellaneous products timber drain in the Lake States (5-year average 1945-49)

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M. bd. ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine.........	750	220	750	150	70
Minnesota.......	250	70	250	50	20
Wisconsin.......	190	70	190	40	30
Michigan........	310	80	310	60	20
Red pine...........	410	110	410	80	30
Minnesota.......	200	50	200	40	10
Wisconsin.......	50	20	50	10	10
Michigan........	160	40	160	30	10
Jack pine..........	950	270	950	190	80
Minnesota.......	390	110	390	80	30
Wisconsin.......	140	50	140	30	20
Michigan........	420	110	420	80	30
Spruce.............	250	70	250	50	20
Minnesota.......	100	30	100	20	10
Wisconsin.......	50	10	50	10	...
Michigan........	100	30	100	20	10
Balsam.............	660	180	660	130	50
Minnesota.......	250	70	250	50	20
Wisconsin.......	50	20	50	10	10
Michigan........	360	90	360	70	20
Tamarack...........	250	70	250	50	20
Minnesota.......	100	30	100	20	10
Wisconsin.......	50	10	50	10	...
Michigan........	100	30	100	20	10
Cedar..............	1,420	760	1,420	340	420
Minnesota.......	340	100	340	70	30
Wisconsin.......	580	210	580	120	90
Michigan........	500	450	500	150	300
Hemlock............	150	50	150	30	20
Minnesota.......	...	...	...	...	...
Wisconsin.......	50	20	50	10	10
Michigan........	100	30	100	20	10
Softwood total.....	4,840	1,730	4,840	1,020	710
Minnesota.......	1,630	460	1,630	330	130
Wisconsin.......	1,160	410	1,160	240	170
Michigan........	2,050	860	2,050	450	410

Table 23.--Annual miscellaneous products timber drain in the Lake States (5-year average 1945-49) -- continued

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple.............	2,080	520	2,080	400	120
Minnesota......	...	...	...	...	...
Wisconsin......	410	130	410	90	40
Michigan.......	1,670	390	1,670	310	80
Birch.............	2,010	410	2,010	380	30
Minnesota......	1,820	360	1,820	340	20
Wisconsin......	140	40	140	30	10
Michigan.......	50	10	50	10	...
Basswood..........	750	190	750	150	40
Minnesota......	340	70	340	60	10
Wisconsin......	320	100	320	70	30
Michigan.......	90	20	90	20	...
Elm...............	430	100	430	80	20
Minnesota......	...	...	...	...	...
Wisconsin......	...	...	...	...	...
Michigan.......	430	100	430	80	20
Beech.............	2,890	800	2,890	640	160
Minnesota......	...	...	...	...	...
Wisconsin......	...	...	...	...	...
Michigan.......	2,890	800	2,890	640	160
Oak...............	510	120	510	100	20
Minnesota......	50	10	50	10	...
Wisconsin......	30	10	30	10	...
Michigan.......	430	100	430	80	20
Aspen.............	5,540	2,250	5,540	1,350	900
Minnesota......	4,480	1,500	4,480	1,130	370
Wisconsin......	360	540	360	90	450
Michigan.......	700	210	700	130	80
Miscellaneous.....	390	100	390	80	20
Minnesota......	...	...	...	...	...
Wisconsin......	70	30	70	20	10
Michigan.......	320	70	320	60	10
Hardwood total....	14,600	4,490	14,600	3,180	1,310
Minnesota......	6,690	1,940	6,690	1,540	400
Wisconsin......	1,330	850	1,330	310	540
Michigan.......	6,580	1,700	6,580	1,330	370
All species.......	19,440	6,220	19,440	4,200	2,020
Minnesota......	8,320	2,400	8,320	1,870	530
Wisconsin......	2,490	1,260	2,490	550	710
Michigan.......	8,630	2,560	8,630	1,780	780

Table 24.--Total timber drain in the Lake States - 1946

Species and origin	Net timber drain, by size class: Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine.....	50,490	15,250	50,490	10,930	4,320
Minnesota....	8,905	3,520	8,905	1,930	1,590
Wisconsin....	22,135	6,470	22,135	4,840	1,630
Michigan.....	19,450	5,260	19,450	4,160	1,100
Red pine.......	44,810	13,645	44,810	9,330	4,315
Minnesota....	18,735	6,880	18,735	3,895	2,985
Wisconsin....	18,045	4,685	18,045	3,745	940
Michigan.....	8,030	2,080	8,030	1,690	390
Jack pine......	68,645	55,525	68,645	14,455	41,070
Minnesota....	47,615	39,115	47,615	9,930	29,185
Wisconsin....	7,880	8,040	7,880	1,845	6,195
Michigan.....	13,150	8,370	13,150	2,680	5,690
Spruce.........	19,795	32,910	19,795	4,090	28,820
Minnesota....	9,870	20,390	9,870	2,070	18,320
Wisconsin....	2,010	2,840	2,010	420	2,420
Michigan.....	7,915	9,680	7,915	1,600	8,080
Balsam.........	10,580	20,070	10,580	2,290	17,780
Minnesota....	4,310	7,940	4,310	1,050	6,890
Wisconsin....	2,000	4,010	2,000	410	3,600
Michigan.....	4,270	8,120	4,270	830	7,290
Tamarack.......	9,345	7,365	9,345	3,355	4,010
Minnesota....	5,735	5,005	5,735	2,330	2,675
Wisconsin....	1,805	1,295	1,805	570	725
Michigan.....	1,805	1,065	1,805	455	610
Cedar..........	17,000	9,110	17,000	4,000	5,110
Minnesota....	4,610	2,040	4,610	1,125	915
Wisconsin....	2,505	1,630	2,505	655	975
Michigan.....	9,885	5,440	9,885	2,220	3,220
Hemlock.......	251,355	68,445	251,355	51,600	16,845
Minnesota...	...	...	...	...	...
Wisconsin...	55,200	20,215	55,200	11,940	8,275
Michigan....	196,155	48,230	196,155	39,660	8,570
Softwood total	472,020	222,320	472,020	100,050	122,270
Minnesota...	99,780	84,890	99,780	22,330	62,560
Wisconsin...	111,580	49,185	111,580	24,425	24,760
Michigan....	260,660	88,245	260,660	53,295	34,950

Table 24.--Total timber drain in the Lake States - 1946
(continued)

Species and origin	Net timber drain, by size class					Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees		Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.		M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple.........	279,680	83,870	279,680	69,110	14,760	Oak...........	149,055	75,015	149,055	44,740	30,275
Minnesota...	1,745	980	1,745	595	385	Minnesota...	19,515	11,910	19,515	6,740	5,170
Wisconsin....	61,245	19,820	61,245	15,685	4,135	Wisconsin...	84,920	40,270	84,920	24,445	15,825
Michigan....	216,690	63,070	216,690	52,830	10,240	Michigan....	44,620	22,835	44,620	13,555	9,280
Birch.........	114,095	35,450	114,095	28,240	7,210	Aspen.........	120,560	144,410	120,560	33,850	110,560
Minnesota...	6,900	3,015	6,900	2,170	845	Minnesota...	64,255	56,070	64,255	18,350	37,720
Wisconsin...	27,110	9,665	27,110	7,125	2,540	Wisconsin...	28,380	44,840	28,380	7,610	37,230
Michigan....	80,085	22,770	80,085	18,945	3,825	Michigan....	27,925	43,500	27,925	7,890	35,610
Basswood......	55,395	17,555	55,395	13,895	3,660	Cottonwood....	9,365	2,875	9,365	2,320	555
Minnesota...	10,625	4,195	10,625	3,125	1,070	Minnesota...	6,085	1,885	6,085	1,430	455
Wisconsin...	24,750	7,430	24,750	5,860	1,570	Wisconsin...	1,110	420	1,110	380	40
Michigan....	20,020	5,930	20,020	4,910	1,020	Michigan....	2,170	570	2,170	510	60
Elm...........	91,550	32,235	91,550	24,590	7,645	Miscellaneous.	34,210	14,320	34,210	10,240	4,080
Minnesota...	14,925	6,385	14,925	4,710	1,675	Minnesota...	7,320	4,250	7,320	3,010	1,240
Wisconsin...	33,675	10,670	33,675	8,405	2,265	Wisconsin...	11,430	4,460	11,430	3,060	1,400
Michigan....	42,950	15,180	42,950	11,475	3,705	Michigan....	15,460	5,610	15,460	4,170	1,440
Beech.........	34,150	9,735	34,150	8,215	1,520	Hardwood total	888,060	415,465	888,060	235,200	180,265
Minnesota...	....	...	...	...	...	Minnesota...	131,370	88,690	131,370	40,130	48,560
Wisconsin...	940	350	940	260	90	Wisconsin...	273,560	137,925	273,560	72,830	65,095
Michigan....	33,210	9,385	33,210	7,955	1,430	Michigan....	483,130	188,850	483,130	122,240	66,610
						All species...	1,360,080	637,785	1,360,080	335,250	302,535
						Minnesota...	231,150	173,580	231,150	62,460	111,120
						Wisconsin...	385,140	187,110	385,140	97,255	89,855
						Michigan....	743,790	277,095	743,790	175,535	101,560

NOTE: Miscellaneous species -	Ash	Cherry	Hickory	Walnut	Yellowpoplar	Other
Minnesota (percent)	23			1		76
Wisconsin (percent)	61	.5	.5	2		36
Michigan (percent)	49	4	3	4	1	39